

CLAIMS

1. A battery pack comprising: a rechargeable battery (2) and a substrate (3) at least having an external terminal (6) being electrically connected and united by solidified molded resin, and partly covered by a resin mold member (97) which at least having an opening for exposing said external terminal (6) to the outside.

2. A battery pack comprising: an intermediate product (8) being formed with a rechargeable battery (2) and a substrate (3) at least having an external terminal united by a resin mold member (11), the battery (2) including elements for electromotive force being accommodated in a bottomed tube-like battery case (22) with its open end sealed by a sealing plate (23) and the external terminal (6) being connected onto the sealing plate (23) of the battery (2) such that the external terminal (6) is on the outside; an upper resin mold (97) at least having an opening for exposing the external terminal (6) to the outside bonded to the intermediate product (8) such as to cover the substrate (3) and the resin mold member (11); a lower resin mold (98) being bonded to a bottom face of the battery case (22); and a sheet (13) being wound around side faces of the upper resin mold (97), the lower resin mold (98), and the battery case (22).

3. The battery pack according to claim 2, wherein the

upper resin mold (97) and the lower resin mold (98) are coupled together by connection pieces (99, 100) that run along sides of the battery (2).

5 4. The battery pack according to claim 3, wherein the upper resin mold (97) and the lower resin mold (98), and the connection pieces (100) are integrally molded such that the connection pieces (100) is bendable at right angles at hinges (102) formed therewith.

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 5. A method for manufacturing a battery pack, comprising: connecting a circuit substrate (3) being formed with an external terminal (6) on one side to a rechargeable battery (2) by a connecting member; arranging the circuit
15 substrate (3) such that the opposite side of the circuit substrate (3) faces a sealing plate (23) of the rechargeable battery (2) with a gap therebetween for forming an object (7) to be resin packed; placing the object (7) to be resin packed inside a die such that the rechargeable battery (2)
20 and the circuit substrate (3) are in predetermined positions; filling the gap between the rechargeable battery (2) and the circuit substrate (3) with resin for forming an intermediate product (8) by uniting the rechargeable battery (2) and the circuit substrate (3); and forming an outer
25 covering such that at least the external terminal (6) of the intermediate product (8) is exposed to the outside.

6. A method for manufacturing a battery pack

comprising: connecting a circuit substrate (3) being formed
with an external terminal (6) on one side to a flat prismatic
rechargeable battery (2) on a sealing plate (23) side thereof
5 by a connecting member; arranging the circuit substrate (3)
so that the opposite side of the circuit substrate (3) faces
the sealing plate (23) of the rechargeable battery (2) with
a gap therebetween for forming an object (7) to be resin
packed; placing the object (7) to be resin packed inside a
10 die such that a bias is applied thereto so that either one
of the sealing plate (23) and a bottom face of the
rechargeable battery (2) abuts on a wall that defines the
position of the battery and is formed inside the die;
arranging the circuit substrate (3) being held by vacuum
15 suction on a wall that defines the position of the substrate
and is formed inside the die parallel to the wall that defines
the position of the battery; filling the gap between the
rechargeable battery (2) and the circuit substrate (3) to
form an intermediate product (8) by uniting the rechargeable
20 battery (2) and the circuit substrate (3); and forming an
outer covering such that at least the external terminal (6)
of the intermediate product (8) is exposed to the outside.

7. A method for manufacturing a battery pack

25 comprising: connecting a circuit substrate (3) being formed
with an external terminal (6) on one side to a flat prismatic
rechargeable battery (2) on a sealing plate (23) side thereof

by a connecting member; arranging the circuit substrate (3) so that the opposite side of the circuit substrate (3) faces the sealing plate (23) of the rechargeable battery (2) with a gap therebetween for forming an object (7) to be resin packed; placing the object (7) to be resin packed inside a die such that a bias is applied thereto so that either one of the sealing plate (23) and a bottom face of the rechargeable battery (2) abuts on a wall that defines the position of the battery and is formed inside the die; arranging the circuit substrate (3) such that a bias is applied so that both ends of the circuit substrate (3) abut on a wall that defines the position of the substrate and is formed parallel to the wall that defines the position of the battery; filling the gap between the rechargeable battery (2) and the circuit substrate (3) with resin for forming an intermediate product (8) by uniting the rechargeable battery (2) and the circuit substrate (3); and forming an outer covering such that at least the external terminal (6) of the intermediate product (8) is exposed to the outside.

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8. A method for manufacturing a battery pack comprising: connecting a circuit substrate (3) being formed with an external terminal (6) on one side to a flat prismatic rechargeable battery (2) on a sealing plate (23) side thereof by a connecting member; arranging the circuit substrate (3) so that the opposite side of the circuit substrate (3) faces the sealing plate (23) of the rechargeable battery with a

gap therebetween for forming an object (7) to be resin packed; placing the object (7) to be resin packed inside a die such that a bias is applied so that either one of the sealing plate (23) and a bottom face of the rechargeable battery (2) abuts on a wall that defines the position of the battery and is formed inside the die; arranging the circuit substrate (3) such that one edge of the circuit substrate (3) fits in a groove that defines the position of the substrate and is formed parallel to the wall that defines the position of the battery; filling a gap between the rechargeable battery (2) and the circuit substrate (3) with resin for forming an intermediate product (8) by uniting the rechargeable battery (2) and the circuit substrate (3); and forming an outer covering such that at least the external terminal (6) of the intermediate product (8) is exposed to the outside.

9. A method for manufacturing a battery pack comprising: arranging a circuit substrate (3) being formed with an external terminal (6) on one side on a sealing plate (23) side of a flat prismatic rechargeable battery (2) with a gap therebetween; connecting the circuit substrate (3) to the rechargeable battery (2) by a resilient connecting member that biases the circuit substrate (3) in a direction away from the rechargeable battery (2) for forming an object (7) to be resin packed; placing the object (7) to be resin packed inside a die against the biasing force of the

connecting member, the die having an inner space that restricts a dimension from the bottom face of the rechargeable battery (2) to one surface of the circuit substrate (3) where the external terminal (6) is formed; filling a gap between the rechargeable battery (2) and the circuit substrate (3) with resin for forming an intermediate product (8) by uniting the rechargeable battery (2) and the circuit substrate (3); and forming an outer covering such that at least the external terminal (6) of the intermediate product (8) are exposed to the outside.

10. The method for manufacturing a battery pack according to any one of claims 5 to 9, wherein the sealing plate (23) of the rechargeable battery (2) is provided with an undercut portion that protrudes toward the circuit substrate (3), so that resin filled in the gap between the rechargeable battery (2) and the circuit substrate (3) firmly engages with the rechargeable battery (2).

11. The method for manufacturing a battery pack according to claim 5, wherein the outer covering provided to the intermediate product (8) include an upper mold (17) covering one surface of the circuit substrate (3) where the external terminal is formed and the sealing plate (23) of the rechargeable battery (2) while exposing at least the external terminal (6) to the outside; a lower mold (18) formed on the bottom face of the rechargeable battery (2)

having a predetermined height; and a connecting mold part (19) that couples the upper mold (17) and the lower mold (18) along the shorter sides of the rechargeable battery (2), the molds being formed by a secondary molding process, and a sheet (13) is wound around to cover the side faces of the rechargeable battery (2), part of the side faces of the upper mold (17) and the lower mold (18), and the connecting mold part (19).

10 12. The method for manufacturing a battery pack according to claim 11, wherein the rechargeable battery (2) is formed to have an oval cross section, and the connecting mold part (19) is molded to conform to part of a rectangle that surrounds circular arcs at both ends of the oval cross
15 section.

 13. The method for manufacturing a battery pack according to any one of claims 5 to 9, wherein the outer covering is formed by sheathing the intermediate product (8)
20 with a tube-like member or a bottomed tube-like member having a predetermined height, and resin filling in the open end on one or both of the external terminal side of the circuit substrate (3) and the bottom face side of the rechargeable battery (2) such that predetermined parts including the
25 external terminal (6) are exposed to the outside.

 14. The method for manufacturing a battery pack

according to any one of claim 5 to 9, wherein the outer covering is formed of resin such as to cover the entire surface of the intermediate product (8) except for predetermined parts including the external terminal (6).

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15. The method for manufacturing a battery pack according to any one of claim 5 to 9, wherein parts of the dies used for the primary and secondary molding that make contact with exposed active parts of the object (7) to be resin packed or the intermediate product (8) is provided with an insulation coating

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